Literature Cited

Bottino, P. J. 1965. Radiosensitivity studies on an interspecific grass hybrid. J. Heredity 56:225–228.

Bowden, W. M. 1965 Cytotaxonomy of the species and interspecific hybrids of the genus Agropyron in Canada and neighboring areas. Canad. J. Bot. 43:1421–1448.

Braegger, D. R. 1967. Karyotype analysis as an index of radiosensitivity of a grass hybrid. M.S. thesis (unpublished). Utah State University.

Dewey, D. R. 1961. Hybrids between Agropyron repens and Agropyron desertorum. J. Heredity. 52:13–21.

———. 1963. Self fertility in crested wheat. Crop Sci. (Madison) 3:351–354.

———. 1964a. Synthetic hybrids of new world and old world Agropyrons. I. Tetraploid Agropyron spicatum × diploid Agropyron cristatum. Amer. J. Bot. 51:763–769.

———. 1964b. Genome analysis of Agropyron repens × Agropyron cristatum synthetic hybrids. Amer. J. Bot. 51:1062–1065.

———. 1966. Synthetic Agropyron-Elymus hybrids. I. Elymus canadensis × Agropyron subsecundum. Amer. J. Bot. 53:87–94.

———. 1967. Synthetic hybrids of new world and old world Agropyrons: III. Agropyron repens × tetraploid Agropyron spicatum. Amer. J. Bot. 54:93–98.

THE WATER HYACINTH IN CALIFORNIA

Jane H. Bock

Eichhornia crassipes (Mart.) Solms. (Pontederiaceae) commonly is called water hyacinth. The first record of *E. crassipes* in California was from a slough near Clarksburg, Yolo Co. (*Smith,* Sept. 30, 1904, UC). The first published account (Johnson, 1920) recorded it from the Centerville Bottoms, King River System, Fresno Co. I have found *E. crassipes* to be naturalized in California in the Kings, Tuolumne, San Joaquin, and Sacramento rivers systems (fig. 1). The northern limit of naturalization for this species in California was found in Babel Slough, about 10 miles northwest of Sacramento. This may be a world-wide northern limit for the weedy distribution of this species. The southern limit in California was in a pond draining from Lake Hodges, Clevenger Canyon, Ramona, San Diego Co. (*Franklin & Buckner,* Nov. 29, 1967, SD). The distribution of water hyacinths in California appears to be expanding since its early sightings in Yolo and Fresno counties. It still is found in these locations as well as in several new places (fig. 1). The distribution map is based upon personal observation and upon herbarium specimens (CAS, DAV, DS, Fresno State College, GH, LA, ND, NY, POM, RSA, SD, UC, UCR, UCSB, and US).

Unfortunately, no record exists of the progressive spread of *E. crassipes* in California, so that we must surmise how it occurred. Almost certainly, the species was introduced into the state by man as an ornamental. Subsequently, plants were put into California waterways. Plants from the Kings River system could have spread to the San Joaquin because of their proximity north of Fresno. And it is not difficult to imagine plants moving

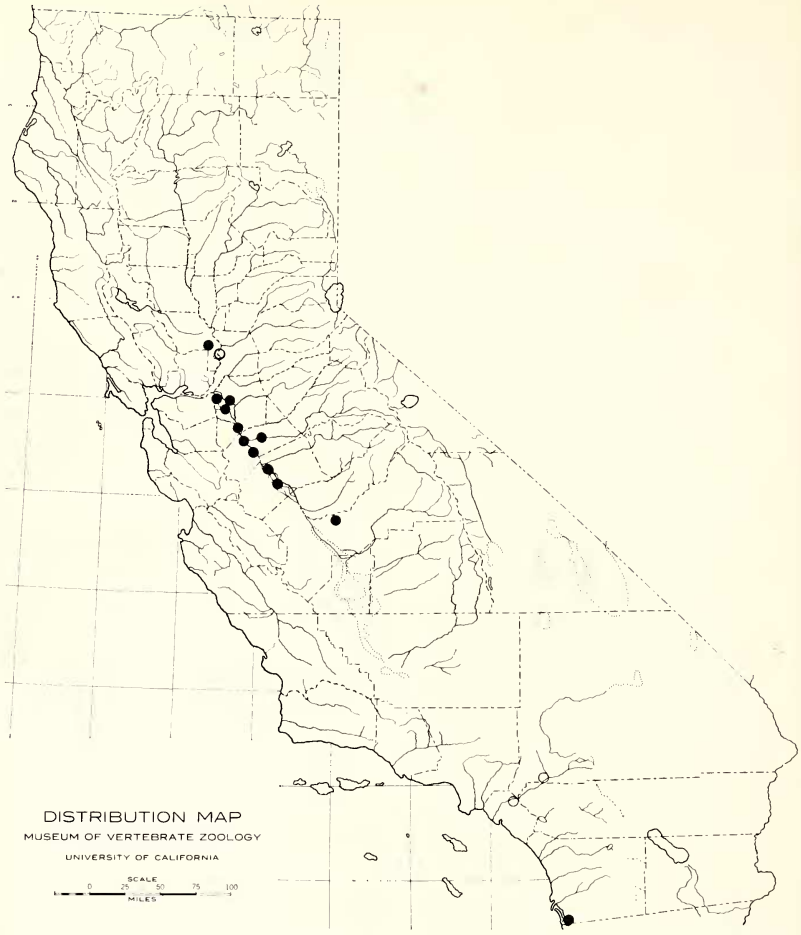

FIG. 1. Distribution of *Eichhornia crassipes* in California; present, solid circles; past, open circles.

between the San Joaquin and Tuolumne systems, since they meet nine miles west of Modesto. In addition, the Sacramento and San Joaquin systems meet north of Stockton. There is still more room for expansion available. For example, water hyacinths may move into the Stanislaus River and into new regions of the San Joaquin-Sacramento Delta in future years. In some areas, such as the Santa Ana River System, San Bernardino Co., water hyacinths are no longer found because of drought and drastic changes in the natural water supply which have accompanied the rapid increase in human population.

The water hyacinth, a native of the American tropics, owes its success in California to its extremely rapid rate of vegetative growth and reproduction and its wide range of environmental tolerances (Bock, 1966).

Each winter, thousands of plants are killed, especially in northern California, by the winter cold. However, enough survive through each winter to the following spring to serve as colonizers for the summer's growth, and to increase distribution. In spite of this natural seasonal control, water hyacinths should be watched carefully both by governmental water weed experts and by interested botanists.

This paper is a portion of a thesis for the Ph. D. degree at the University of California, Berkeley. The guidance of H. G. Baker and the assistance of my husband, Carl, are gratefully acknowledged.

Biology Department, University of Colorado, Boulder

Literature Cited

Bock, J. 1966. An ecological study Eichhornia crassipes with special emphasis on its reproductive biology. Ph.D. thesis, University of California, Berkeley.

Johnson, E. 1920. Water hyacinth a menace to navigation in the South. Monthly Bull. Calif. State Dept. Agr. 9:76–80.

NOTES ON ORYZOPSIS HENDERSONII (GRAMINEAE)

Richard Spellenberg

Prior to 1966 the grass *Oryzopsis hendersonii* Vasey was known from only four collections. Three of these were from the vicinity of Mt. Clements in Yakima Co., Washington (Mt. Clements, *F. L. Henderson 2249,* 1892; Oak Ridge Rd., *D. B. Gray,* 1949; Oak Creek Game Range, *D. B. Gray & C. F. Martinsen,* 1950), the other from the Ochoco National Forest, Oregon (Trout Creek Basin, *D. C. Ingram,* 1916). In June, 1966, I discovered a large population north of Colockum Pass in NE Kittitas Co., Washington, extending the known range of the species northward 40 miles. Three more populations were found later, two in the early spring of 1967, along the north side of the Kittitas Valley in the vicinity of Ellensburg. These four new records, listed by my collection numbers, are as follows: *1450,* on the Ellensburg—Wenatchee Rd. N of Clockum Pass, ca. 5 miles S of the Kittitas Co. line; *1465, 1466, 1467,* stations one half mile apart along Trail Creek ca. 15 miles NE of Ellensburg; *1642, 1662,* along Naneum Creek 9 miles N of Ellensburg; *1645,* ridge top N of Hwy. 131, 3 miles E of Virden.

The first of these populations grew at 4,300 ft. elev., on a broad ridge top, in a nearly barren opening in mixed ponderosa pine—Douglas fir forest. The oryzopsis formed about 50% of the sparse vegetation in some portions of this area; the most common species with it was *Poa secunda* Presl. The other collections were made in similar habitats along the lower edge of the pine zone at about 3,000 ft. elev. Each population was found on rocky basaltic soil and occupied what appeared to be the driest site in the area.

The plants form low, dense, gray-green tufts up to 20 cm across and